



UTAH NATIONAL GUARD GUIDELINES AND SPECIFICATIONS

All construction for the Utah National Guard (UTNG) Construction Facilities Management Office (CFMO) will comply with all applicable Federal, State, and local laws, regulations and building codes. Construction will adhere to and follow all applicable environmental laws, controls, and regulations. Construction will utilize the latest construction disciplines and principles to construct buildings that are energy efficient, maintainable and durable. The following specifications are for the additional requirements of the Utah National Guard and do not supersede current codes and regulations implemented by the governing bodies.

1) Project Development

- a) All parties involved with the construction plan must be present at the scoping meeting verifiable by signature and attending parties contact info. Attendees for subsequent meetings will be determined by the Architect/Engineer (A/E) and the Project Manager (PM).
 - i) Building Maintenance, Engineering and stakeholders will be invited to scoping meetings for projects in their purview. They will have the opportunity to review plans and submit comments in the development stages and before final approval.
 - ii) All decisions and changes will be approved only through the PM. Discipline POC's can always provide input but the final decision is by the PM.
 - iii) A/E will set up at a minimum 30%, 60% and 90% design review meetings and final design stage with all parties involved before submitting to the Division of Facilities and Construction Management (DFCM). A/E will provide electronic files in PDF format for review before each meeting.
 - iv) The A/E will provide an initial building real property worksheet (DD Form 1354) as listed below in the Building Real Property section of this document.
 - v) The final scope of work will contain a project summary after the table of contents listing the general scope of work for ease and quick reference.
 - vi) Project progress photos will be submitted to the PM after each site visit.
 - vii) A project timeline will be provided with major milestones clearly defined.
- b) During the construction phase of the contract if the plans and specifications do not agree, the PM for the National Guard will determine the applicable course of action.
- c) Building construction projects must not result in piles of leftover earth from building foundations and excavations. A/E will work with the PM and the CFMO Civil Engineer to set the floor level of a new building. Use excavated earth to create site drainage of landscape features, gravel parking lots and other places where the native earth is suitable.
- d) A/E will incorporate principles of Low Impact Development when designing storm water disposal systems for new facilities.
- e) O&M manuals will be produced with a listing of maintenance programs and warranty information listed in the front of the books for the maintenance teams to have easier reference. The maintenance manual will list the frequency and sequence of preventative maintenance to be performed.



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



- f) O&M manuals will be provided within 30 days of substantial completion. Final bills are not approved for payment until operation and maintenance manuals and as-built drawings are provided to owner.
- g) Military-specific specifications can be found in the Unified Facilities Guide Specifications.

2) Safety

- a) The contractor on each job will contact Blue Stakes to identify underground utilities before digging. This may include calling 811 if the digging is outside armory property or outside Camp Williams' property.
- b) For digging on armory property, the contractor must submit a work request with CFMO Maintenance at 801-432-4173. They will schedule CFMO Facility Maintenance or a GIS specialist for blue staking at armories.
- c) For digging on Camp Williams, the contractor must submit a work request with the Directorate of Public Works (DPW) at 801-878-5518 for blue stakes services. DPW will schedule their blue stakes specialist for work being done on Camp Williams.
- d) Blue stakes for digging at the UTNG part of Dugway Proving Grounds must be scheduled through Camp Williams DPW and the Dugway Facilities Department. Contact DPW Engineering at 801-878-5594 or 801-878-5428 for the current contact information for the Dugway Facilities Department.

3) Energy Management

- a) During a building's design and development, apply a comprehensive, integrated approach to the process, to:
 - i) Reduce heating, cooling, and lighting demand through passive strategies such as climate-responsive design, daylighting, and conservation practices.
 - ii) Specify efficient HVAC and lighting systems that consider part-load conditions and utility interface requirements.
 - iii) Employ renewable energy sources such as solar heating for hot water, photovoltaics, geothermal space heating, and groundwater cooling, sized for the reduced building loads.
 - iv) Optimize building performance by employing energy modeling programs during design.
 - v) Optimize system control strategies by using occupancy sensors, CO₂ sensors, and other air quality alarms during operation.
 - vi) Monitor project performance through a policy of commissioning, metering, annual reporting, and periodic re-commissioning.
 - vii) Consider retro-commissioning of buildings which were never originally commissioned.



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



- viii) Integrate water saving technologies to reduce the energy burden of providing potable water.
- b) Apply this integrated process to the reuse, renovation or repair of existing buildings as well.
- c) All construction will comply with the specific guidelines and requirements listed below. The CFMO Energy Manager will be the approving authority for energy requirements.
- d) Follow the Utah Division of Facilities and Construction Management (DFCM) requirements for energy efficient products and high performance building systems. They are found in the DFCM High Performance Building Standard on their website at: <https://dfcm.utah.gov/high-performance-building-standard/>.
- e) A Project's FINAL accepted submittals must comply with the International Energy Conservation Code 2015 requirements. Copy furnish to the Energy Manager: COMcheck Envelope, Mechanical, Exterior & Interior Lighting of the FINAL accepted submittals.
- f) Buildings using federal funds must exceed ASHRAE 90.1-2013 per EP Act 2005. Building equipment must comply with Energy Star or Federal Energy Monitoring Program standards.

4) Electrical

- a) Electrical will be designed according to the current National Electric Code and the Energy Manager's and Maintenance Director requirements. See the DFCM Design requirements at www.dfcu.utah.gov for specific electrical requirements.
- b) All outlets and fixtures must be labeled with the panel and breaker number at the termination and all subsequent points along the line. A single line drawing schematic of all lines and termination points will be provided in the final as built.
- c) All electrical equipment will be tagged and labeled per DFCM standards with sequencing from the National Guard maintenance manager.
- d) Occupancy sensors will be utilized for lighting. It shall be the contractor's responsibility to locate and aim sensors in the correct location required for complete and proper volumetric coverage within the range of coverage(s) of controlled areas per the manufacturer's recommendations. Rooms shall have ninety (90) to one hundred (100) percent coverage to completely cover the controlled area to accommodate all occupancy habits of single or multiple occupants at any location within the room(s). The locations and quantities of sensors shown on the drawings are diagrammatic and indicate only the rooms which are to be provided with sensors. The contractor shall provide additional sensors if required to properly and completely cover the respective room.
- e) Contractor will arrange a pre-installation meeting with an authorized representative, at owner's facility, to verify placement of sensors and installation criteria.
- f) Proper judgment must be exercised in executing the installation so as to ensure the best possible installation in the available space and to overcome local difficulties due to space limitations or interference of structural components. The contractor shall also provide, at the owner's facility, the training necessary to familiarize the owner's personnel with the



operation, use, adjustment, and problem solving diagnosis of the occupancy sensing devices and systems.

- g) Plan during the initial design phase for an Automatic Transfer Switch for connecting a generator to a building.
- h) Plan for drop ceilings instead of hard lid applications during design and construction to allow future access for electrical or telecommunications work except restrooms, locker rooms, and kitchens.
- i) All new panels installed in UTNG installations will have load calculation readings completed as part of the close out documents.
- j) Restrooms will have motion lights tied to the exhaust fans.
- k) Remove all abandoned conduits and fixtures at the point of origin.
- l) Provide a minimum of ten working days' notice to PM for required power outages. This will give the PM time to warn the building owners, maintenance managers or users affected.
- m) Any CAT6 cabling needs to be done per Appendix A.
- n) Spare Electrical Capacity: Provide 25% future space for additional overcurrent protection devices in panel boards and switchboards. Provide 25% additional load capacity in addition to the capacity required for continuous loads in panel boards and switchboards.

5) HVAC

- a) Heating, Ventilation and Air Conditioning (HVAC) equipment will utilize DDC (direct digital controls). The Energy Manager will review and approve all mechanical and electrical equipment going into the designs.
- b) See the DFCM Design requirements at www.dfcu.utah.gov for specific HVAC requirements.
- c) All work must have a corresponding plan and single line drawing of each system and areas it covers. This is to include all VFD's, valves, pumps and other HVAC equipment.
- d) All equipment requiring power will be labeled with the breaker number and panel number that it is associated with. Place both the breaker number and the panel number on the equipment power disconnect.
- e) All HVAC equipment will be tagged and labeled per DFCM and Utah National Guard maintenance manager's specifications.
- f) All server rooms or IT closets will have a dedicated split air system to provide cooling only for equipment and additional thermostat for monitoring only.
- g) Remove all abandoned equipment, hangars and fasteners from origin or nearest junction.
- h) Any CAT6 cabling needs to be done per Appendix A.
- i) Add thermostats to fire riser rooms for monitoring only.
- j) Ensure that there is adequate space above the drop ceiling in hallways for a technician to access and service or replace HVAC equipment.
- k) Design Exhaust fans to exceed minimum standards to improve air movement especially in shower and locker rooms.



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



- l) Spare Mechanical Space: Provide 25% spare space in pipe chases and for mechanical equipment (except air handlers).
- m) Add a label on the metal ceiling grid below all variable air volume (VAV) assemblies to identify the VAV locations for maintenance workers.

6) Plumbing

- a) Plumbing will adhere to the most recent plumbing and building codes and utilize water efficient fixtures and appliances. See the DFCM Design requirements at www.dfcm.utah.gov for specific plumbing requirements.
- b) Single line drawings will be provided showing valves, terminations and connections. They will also show which area of building is serviced by which service connection. This will include which valves control water to which part of the building. These valves will be labeled to identify them with the corresponding drawings.
- c) Along with tagging, the information must be provided to CFMO maintenance and must have the tag number, type of unit, serial number, size, manufacturer and appropriate location. Also any information such as belt sizes or maintenance schedules will be provided.
- d) Safety eye washes and safety showers must use tempered water, not straight cold water.
- e) Restrooms will meet or exceed these standards:
 - i) Urinals will be 1 GPF and use auto flush valves.
 - ii) Floor mounted toilets will be 1.6 GPF or less and use auto flush valves.
 - iii) All sink faucets will use auto eye type fixtures.
 - iv) Showers will use Hyko valve heads or equal.
 - v) Add shelves to mirrors above sinks.
 - vi) Restroom dispensers will be provided by Waxie. Coordinate installation with the maintenance manager.
 - vii) Tile on all plumbing walls will be a minimum of 4' high. Other walls will have tile base to match.

7) Environmental

- a) All contracts and contractors will conform to applicable State and Federal Environmental Regulations. Any questions regarding applicable requirements can be directed to the PM.
- b) Implement at least a 50% recyclable construction material program to be documented and tracked during construction. This meets the requirements of the Army's solid waste annual report. All contracts will specify to report weight actual or estimate, volume actual or estimate, revenue, cost, tenant name, invoice number for construction and debris recycled glass, metals, paper, cardboard, plastic, and textiles, wood and cardboard. This information will be given to the PM to be entered into a reporting database for the Utah



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



Army National Guard Solid Waste Annual Report. Forms are available from the UTNG environmental office. See Appendix B.

- c) If hazardous waste is generated, transportation and disposal options shall be reviewed by the UTNG Hazardous Waste Manager prior to shipment off-site.
- d) Where practical, install facility air conditioning and refrigeration systems as well as firefighting systems which use equipment and/or chemicals which are EPA-approved alternatives to traditional Ozone Depleting Chemical (ODC) based systems. At a minimum, use systems which use Class II ODCs which have production phase-out dates at least ten years from the projected facility completion date.

8) Storm Water Prevention Pollution Plan for Construction Activity

- a) Eligibility: As defined in the Utah Administrative Code R317-8-3.9, Code of Federal Regulations 40 Section 122, Army Regulation 200-1 section 4-2, Storm Water Pollution Prevention Plans (SWPPP) are required where storm water discharges may be present at large or small construction projects. Large or small construction projects are defined by construction activities that result in a *total* land disturbance of equal to or greater than one acre. In addition, Section 438 of the Energy Independence and Security Act of 2007 (EISA), Congress requires that all federal developments that exceed 5,000 square feet to maintain or restore pre-development hydrology. Environmental Resources Management will provide guidance and oversight in maintaining compliance to these regulatory requirements.
- b) The SWPPP must be generated before construction can begin and should include the following:
 - i) Site Plan
 - ii) Site Details including Best Management Practices (BMPs)
 - iii) Pollution Prevention Site Map (PPSM)
 - iv) Endangered Species
 - v) Cultural Resources
 - vi) Monitoring, Inspection, Maintenance Plan
 - vii) Change Management
- c) Implementation: Where a construction project requires a SWPPP, according to the eligibility guidelines above, a PPSM (aka Erosion and Sediment Controls Sheet(s) as specified by the Construction Specification Institute (CSI) 31.25.00) will be created by the architect and be included in the design package.
- d) The following verbiage will be included in the design package: “The Utah Army National Guard will obtain coverage under the Utah Pollution Discharge Elimination System (UPDES) General Permit associated with construction activity. The contractor will be responsible for applying for the Notice of Intent (NOI). This coverage complies with Utah Administrative Code (UAC) R317-8-3.9. The Goal of this permit is to prevent the discharge of pollutants associated with construction activity from entering the storm drain system, ground and surface waters. The contractor (as co-permittee) will develop, certify and comply with the requirements of the SWPPP and the Permits for any work performed



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



on site. Any person or group who violates any condition of the Permit(s) may be subject to substantial penalties in accordance with state and federal law. The contractor is encouraged to advise each employee working on this project of the requirements of the SWPPP and the Permit(s). A copy of the SWPPP and Permit(s) will be made available for review at the Environmental Resource Management Office and at the project site.”

- e) Once the design package has been finalized, the contractor will be responsible for the development of the plan and the remaining necessary elements for successful implementation of the SWPPP, including the plan completion, notice of intent, monitoring, inspecting, and notice of termination.

9) Compliance with the National Environmental Protection Act (NEPA) for Construction Activities

- a) Utah National Guard construction activities will comply with the requirements of NEPA. There are three levels of NEPA documentation. The appropriate level is selected based on the type of action proposed and the environmental issues involved. The three levels are Categorical Exclusion (CX), Environmental Assessment (EA) and Environmental Impact Statement (EIS).
- b) Categorical Exclusion (CX): This level, the "lowest" level of NEPA compliance, is for minor proposed Federal actions that do not have the potential to individually or cumulatively produce significant environmental effects. The Army, in 32 CFR Part 651, Appendix B, has established 52 classes of actions that are categorically excluded from further NEPA analysis, provided certain conditions are met. Examples include:
 - i) Construction of an addition to an existing structure or new construction on a previously undisturbed site if the area to be disturbed has no more than 5.0 cumulative acres of new surface disturbance. (Record of Environmental Consideration (REC) and checklist (CHECK) required).
 - ii) Demolition of non-historic buildings, structures, or other improvements and disposal of debris therefrom, or removal of a part thereof for disposal, in accordance with applicable regulations, including those regulations applying to removal of asbestos, polychlorinated biphenyls (PCBs), lead-based paint, and other special hazard items (REC/CHECK required).
 - iii) Road or trail construction and repair on existing rights-of-ways or on previously disturbed areas.
- c) A REC/CHECK can be completed typically in 1 to 6 weeks (or less), depending upon the issues involved.
- d) To use a CX, the proponent must satisfy the following three screening conditions:
 - i) The action has not been segmented. Determine that the action has not been segmented to meet the definition of a CX. Segmentation can occur when an action is broken down into small parts in order to avoid the appearance of significance of the total action
 - ii) No exceptional circumstances exist.



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



- iii) One (or more) CX encompasses the proposed action. If no CX is appropriate, and the project is not exempted by statute or emergency provisions, an EA or an EIS must be prepared, before a proposed action may proceed.
- e) Environmental Assessment (EA): This level is for proposed Federal actions that may have the potential to produce significant environmental effects. These include actions for which none of the 52 Army CXs applies. If the Proposed Action would not result in significant effects, then a Finding of No Significant Impact (FNSI) is the appropriate decision document. If the Proposed Action would produce such significant effects, then (1) the Proposed Action could be modified to avoid the effect or (2) the next higher level of NEPA compliance would be required: an Environmental Impact Statement (EIS). An EA/FNSI can be completed typically in 8 to 12 months, depending upon the issues involved.
- f) Environmental Impact Statement (EIS): This level is for major proposed Federal actions that have the potential to produce significant environmental effects. An EIS requires more rigorous and prescribed public and agency involvement, publication, review, as well as coordination with the Army; therefore, the process is longer. The decision document resulting from an EIS is a Record of Decision (ROD), signed by the Deputy Director, ARNG. With an EIS, a Proposed Action may result in significant environmental effects; however, the ARNG is required to comply with all other applicable Federal laws (e.g., the Federal Endangered Species Act [ESA]). EIS/RODs typically take from 2 to 5 years to complete.
- g) The PM will request a REC by going to the ERM page of the CFMO SharePoint at https://ngut/staff_sites/erm/SitePages/NEPA.aspx and completing the request to create a REC. ERM personnel will process the REC and investigate the impacts of the project on natural resources, historical resources and tribal issues. ERM personnel will record their approval, denial or conditional approval results in the matrix on the NEPA site page.

10) Data and communication (reference Appendix A)

All projects must be coordinated and approved through the UTNG Telecommunications Manager (G6) to ensure that National Guard standards are adhered to, including switches, networking, phones, T1 data service, etc. There are requirements for conduit and boxes to be installed for security that needs to be completed at the rough stages. Plans with locations need to be approved by the Telecom manager and inspected at the rough stage of installation. Please refer to Appendix A for the G6 standards for projects involving cabling.

11) Building Security Systems and Vaults

- a) There are special requirements for access to UTNG Guard facilities. Special conduit and wiring requirements are generated from this program. Due to the continual evolution of



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



this program it is required to contact the building security systems manager for approval and recommendations.

- b) A signature or stamp is required for verification of compliance from the security systems representative from the UTNG.

12) Door Hardware

- a) Door hardware will be of the type to allow the installation of 'Best' brand cores. The cores will be provided by the contractor and installed by the UTNG. Keying and code information will be gathered from the security manager.
- b) The pinning of the cores will be done at the manufacturer. All cores are 7 pin except for cores going into supply rooms or secure areas which will be 8 pin cores.
- c) Temporary construction locks are the responsibility of the Contractor and must also provide the required amount of keys as specified by the CFMO Office.
- d) Locks for the protection of arms will conform to the specifications of the Department of Defense lock program.
- e) Fences shall meet the requirements of Unified Facilities Criteria 4-022-03 Fencing and Gates.

13) Fire Alarm and Mass Notification Systems

- a) All fire protection designs shall follow current Unified Facilities Criteria (UFC) requirements as found in the current revision of UFC 3-600-1 Fire Protection Engineering for Facilities.
- b) All design and construction projects which involve or impact fire detection and suppression systems for UTNG facilities, especially those involving the design of aircraft hangar fire suppression systems, require the designer (A-E or in-house), and contractor to have on staff, or under contract, a qualified and experienced Fire Protection Engineer (FPE). For the purpose of meeting qualification requirements, a qualified FPE is defined as an individual meeting the requirements of UFC 3-600-01, Fire Protection Engineering for Facilities.
- c) Addressable fire alarm design
 - i) All fire alarm shop drawings shall be submitted to the local Authority Having Jurisdiction (AHJ) prior to installation.
 - ii) All branch circuit breakers providing power to the fire alarm systems shall be identified in power panels with red labels stating 'Fire Alarm Circuit' as required by NEC 760.41(B)
 - iii) Battery Calculations:
 - Battery calculation shall be provided for each control panel, sub-panel, power booster, etc. Calculations shall be submitted on a standard calculation format sheet and shall indicate adequate power for 24-hours of stand-by power and 5



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



minutes of alarm power (15 minutes of alarm for Emergency Communications Systems)

- Calculations for each circuit shall indicate each device, quantity of device(s), current draw of each device, total standby current (amps), total alarm current (amps) and total system current. Current draw of each device shall be matched to the specific current draw as indicated on the manufacturer(s) data sheets for the specific installation. (i.e.: 15 candela strobes will be indicated separately from 75 candela horn/strobes in the calculations due to different current draws)
- Calculations shall include a 20 percent safety margin to the calculated amp-hour ratings.
- Calculations must be coordinated with floor plans and riser diagrams. Discrepancies between drawings and calculations shall result in a rejected submittal.

iv) Voltage Drop Calculations:

- Voltage drop calculations shall be provided for each notification circuit. Calculations shall be submitted on a standard calculation format sheet and shall indicate each appliance voltage draw, circuit length, total voltage draw and drop.
- Voltage drop shall not exceed the allowable percent listed on the manufacturer(s) data sheets for the specific device(s) installed.
- Calculations must be coordinated with floor plans and riser diagrams. Discrepancies between drawings and calculations shall result in a rejected submittal.

v) Copies of the approved addressable fire alarm drawings shall be provided to the facility

- d) All fire protection systems shall use equipment that is Underwriter's Laboratory (UL) listed or Factory Mutual (FM) approved for its intended fire protection service.
- e) The addressable fire alarm systems shall be kept to the minimum required by the referenced standards from this document.
- f) The addressable fire alarm system shall provide radio based, fiber optic or landline based, remote system reporting to the facility's central system, and a secondary central receiver. Provide radio based transmission systems for all new facility-wide systems where an existing networked campus addressable fire alarm system is not present. Retrofit installations shall use system equipment that is listed by a nationally recognized testing laboratory, and is directly compatible with the existing equipment to include the central facility transmitting, any campus fire alarm system network, and receiving system. All facility fire alarm systems must also transmit appropriate signals to the responding (host or other) fire department, which in most cases is the local community fire station. The contractor shall communicate with the Project Manager to ensure all quoted systems are compatible with the existing fire alarm infrastructure prior to bid date.
- g) All addressable fire alarm system conductors shall be run in minimum 3/4 in. electrical metallic tubing (EMT) conduit. Exception would be those locations deemed unsuitable for EMT conduit. In such cases, use rigid or PVC type conduit. Use of flexible metal



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



conduit (FMC) or liquid-tite conduit is not permitted except in areas subject to extreme vibration, and where used, shall be limited to 6 ft. lengths.

- h) Systems shall utilize addressable detection devices and notification appliances.
- i) Provide and install an addressable fire alarm system to meet the requirements of the current NFPA 72, NEC, IBC/IFC, Utah National Guard Construction Guidelines and other pertinent local and state codes.
- j) At all locations that a duct detector is installed, provide remote test switch (install at a maximum of 7 feet above finish floor (AFF) elevation) and LED indicator for maintenance and alarm identification.
- k) The fire alarm control panel for each facility's detection system shall be located in a room with outside access, either the fire protection, mechanical, or electrical rooms. Coordinate the locations of the fire panel and annunciator panel (if required) with the PM.
- l) Any service to fire alarm systems shall be performed by manufacturer-certified technicians with the required software keys to ensure that any system warranty stays intact.
- m) Emergency eyewash and shower station connections to the fire alarm system will be determined by the facility or local Fire Chief. If provided with connections to the fire alarm system, these stations shall report as a supervisory alarm and not as a trouble alarm.
- n) The contractor shall provide the following:
 - i) Identification and operations identifications that are coordinated with and keyed to the posted operations instructions and the operation & maintenance (O&M) manuals.
 - ii) O&M manuals shall be completed, submitted and approved by no later than 30 days prior to beneficial occupancy.
 - iii) Posted instructions for, at a minimum, the following:
 - Comprehensive schematics for Sprinkler and High Expansion Foam (HEF) distribution systems.
 - Facility floor plans showing location of all fire equipment and devices with coordinated identification. Show items such as fire walls, fire dampers etc.
 - System diagrams, including isometrics of special equipment and systems (fire alarm riser, fire pumps, HEF system, etc.).
 - Valve charts.
 - Equipment schedules
 - Wiring diagrams and schematics.
 - Fire/smoke dampers.
 - iv) Posted Operations Instructions, framed in heavy gauge extruded metal frames, mounted under glass. These posted instructions shall be water/weather proof Instructions shall be permanently mounted in the reserved clear wall area (show reserved area in the design drawing details) in each fire protection room or mechanical room. Instructions shall be prepared for all fire protection systems and shall include all components.



- v) Training for Facility personnel on all fire detection and suppression systems. Training shall be specified to be complete with all materials, fees and tuition paid for by the contractor. Employee travel costs shall be paid for by the government.
- vi) A professionally edited DVD for training on all HEF and other "special" systems. Editing shall include voice-over editing describing features and action of the depicted system.

14) Fire Suppression System

- a) For all projects that involve a building addition to an unsprinklered building, both the addition and the existing building shall be sprinklered. This requirement exceeds that of UFC 3-600-01, Fire Protection Engineering for Facilities.
- b) Fire suppression systems shall be wet pipe or dry pipe, and the design shall be based on the hazard involved. Pre-action systems are strongly discouraged, and wet pipe systems are recommended in lieu of pre-action systems.
- c) In no case shall the A-E use any source data for water supply information other than an actual test witnessed and accepted by the A-E representative.
- d) The following component details shall be designed into all suppression systems:
 - i) All steel piping for the fire suppression system shall be minimum schedule 40 thickness.
 - ii) Instructions shall be provided to installers to provide piping with flow markings.
 - iii) Installation of cleated (e.g. Uni-Flange) flanges on any piping is prohibited.
 - iv) Provide dedicated fire service entrance with back-flow prevention device and indicating shut off valve. All fire service utility entrance shall be separate from facility domestic water supply utility entrance. UTNG preference for incoming service is a single stainless steel service.
 - v) Fire suppression system auxiliary drain valves shall be fully accessible and located no higher than 7'-0" AFF.
 - vi) For all projects, design of supports for fire protection systems shall comply, as a minimum, with seismic criteria as outlined in the UFC requirements.
 - vii) All wall and floor penetrations for fire protection piping shall be fully sleeved and sealed.
 - viii) Sprinklers shall be located symmetrically within ceiling tiles. Provide architecturally coordinated, single piece sprinkler trim rings in occupied spaces.
 - ix) For fire hydrants, on facilities where the UTNG is a tenant, follow host facility style and color policy.
 - x) The use of CPVC is allowed for light and ordinary hazard group 1 in accordance with its listing.
 - xi) Sprinklers for server rooms shall be standard response intermediate temperature classification.
- e) All fire sprinkler risers shall be located in rooms with direct access to the exterior of the building, such as mechanical rooms.



- f) Fire protection design for all facilities shall include the following listed features and items.
- g) Provide Knox (or equivalent type) boxes, located on the exterior of the building at a location to be determined by the PM and the local Fire Chief. The box shall be cast brass, recessed style and suitable for housing appropriate keys. Box shall be wired to a tamper switch and routed through the fire alarm panel. Provision of tamper switches for these boxes shall be coordinated with the PM.
- h) Provide fire extinguisher cabinets in accordance with UFC 3-600-01, Fire Protection Engineering for Facilities. All extinguisher cabinets shall be recessed or semi-recessed style with eased corner and glass face. Cabinets shall be specified to be of heavy duty brushed stainless steel construction. Cabinets shall be specified to accommodate the size extinguishers that will be provided by PM. Extinguishers are government furnished items.

15) Passive Fire Protection Systems (Life Safety Systems)

- a) Provide emergency ballast packs in a standard lighting system.
- b) SCIF spaces shall comply with NFPA 101 requirements for life safety.

16) High Expansion Foam (HEF) Hanger Fire Protection

- a) The HEF system releasing panel shall have output capability which emulates all inputs on a zone by zone basis. All system components shall be listed for their operating and environmental conditions.
- b) The HEF system shall incorporate the use of cross-zoned, minimum Class A; supervised heat detection configurations used in conjunction with either a pre-action or wet-pipe sprinkler system. The cross-zoned heat detection shall be spaced at 25 ft. x 25 ft. spacing (625 sq. ft.) with no one side measurement to exceed 25 ft. Detector spacing shall be based on the requirements of NFPA 72 with no de-rating factor applied. Detectors shall be wired with adjacent detectors on opposite zones. Detectors shall be of the rate compensated type with a temperature range of 160 – 170 degrees Fahrenheit. (UL or FM listed). The use of linear type wire or beam detection is prohibited.
- c) No addressable modules for the releasing system shall be located outside of the climate controlled area.
- d) Manual foam activation stations shall be provided with NEMA 4x enclosures, with conduit routed into the bottom of the back box.
- e) The A-E shall layout the HEF Generators based on the approved “normal” facility parking plan.
- f) HEF systems shall include automatic trench drain closure and automatic shutoff of gas supply to aircraft servicing bay. The automatic closure valve controller shall be of the type that must be manually reset. A key type switch or similar device, mounted in close



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



proximity and exterior to the control panel shall control the bypass valve reset. HEF systems do not require independent containment systems.

- g) The following component details shall be designed into the Hangar suppression systems.
 - i) All HEF system piping shall be minimum schedule 40 steel. All HEF piping system couplings, fittings, etc. in a facility shall be of one manufacturer.
 - ii) The use of “All-Thread” rod to mount an HEF Generator is prohibited. The design shall provide for a suitable mounting platform constructed of steel angles and plate suspended from the overhead with steel components or it shall be bracketed to the walls. Design of support shall as a minimum, comply with seismic criteria as outlined in the UFC 3-310-04, Seismic Design for Buildings.
 - iii) Piping design shall show consideration (unions or flanged connections) for the removal of pumps, valves and other items for maintenance.
 - iv) Foam concentrate pipe shall be stainless steel. Pipe gaskets must be compatible with foam concentrate. Flanged connections shall be “Garlock” type or an approved equivalent type that is compatible with the HEF concentrate used. Threaded stainless steel pipe shall only be used at concentrate tank and proportioner locations as called for by the HEF system manufacturer.
 - v) A-E shall require contractor to provide a refill pump for the HEF concentrate system. Horizontal Bladder storage tanks shall be utilized when feasible. Vertical Bladder storage tanks may be permitted, only in existing facilities where there is insufficient space for a Horizontal tank.
 - vi) On new construction, the HEF foam room shall be designed to fully contain a leak of the HEF storage tank, including pressurized discharge. In renovations, provide a minimum containment curb of sufficient height to contain the volume of the HEF tank contents.
 - vii) The installation of the HEF system shall also include a commissioning and start up plan that the contractor will follow, including personnel, equipment, procedures, checklists, required final report data and details of all results that are expected.

17) Plans and AutoCAD Files

- a) Plans and AutoCAD drawing files will be submitted to CFMO. The PM will coordinate delivery and acceptance. All drawings will be delivered in DWG and PDF format. Two sets of Hardcopy drawings will also be provided.
- b) Geo reference all CAD data to surveyed control points. Within plan documents, provide details on the Coordinate System used and the XY coordinates of all control points.
- c) Ensure AutoCAD files are in a common unaltered Geographic Coordinate System, i.e. State Plane (UT83-CF) NAD83 Central Zone US Foot or UTM (UTM83-12) NAD83 Zone 12 North Meters, in order for National Guard GIS staff to properly import into federally mandated ESRI ArcGIS Software. <https://www.esri.com/>
<https://www.sdsfionline.org/>
- d) All AutoCAD drawings will be bound to include all digital XREFs.



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



- e) Submit all “red line” post-construction alterations and edits. Data must be complete and accurate to As Built specifications.

18) Building Real Property

- a) As we are required by law to report how each dollar in construction is used, tracking the expenditures is of utmost importance. A preliminary Department of Defense DD form 1354 is required for all projects. The 1354 is commonly referred to as a schedule of values. The example below lists the typical items required to be entered in the form.
- b) Building real property is an important part of the construction process to track and monitor future costing and maintenance requirements. All data will be coordinated with real property manager.
- c) The A/E and the contractor will work together in providing the 1354 and will be delivered with the as-built drawings as part of the close out documentation.
- d) All laterals are to be measured 5’ out from the building. All other lengths are considered interior. List all items in units by length, width and height as well as units of measure listed below.

<u>Description of work</u>	<u>Measurements</u>	<u>Unit</u>	<u>Cost</u>
Building		SF	
Sidewalks		SY	
Concrete Pads		SY	
Storage Buildings		SF	
Flagpole		EA	
Parking Paved		SY	
Parking Unpaved		SY	
Motor Pool Parking Paved		SY	
Motor pool Parking Unpaved		SY	
Fencing		LF	
Gates		LF	
Roads		SY	
Transformer		KVA	
Underground Electrical Lines		LF	
Communication Lines		LF	
Potable Water Lines		LF	
Gas Pipelines		LF	
Sanitary Sewer		LF	
Loading Ramp		EA	
Wash Platform		EA	
Grease Rack		EA	

For example: Concrete pad #1 3’x 5’x 6” 15 SY. \$250.00



19) Commissioning

- a) Commissioning will be utilized on construction that involves new or updated mechanical and electrical systems and building envelopes. The PM and A/E will determine when commissioning is applicable. The commissioning team will also work in junction with the A/E. Coordinate commissioning requirements with Energy Manager. Typically, the systems and equipment to be commissioned (or recommissioned) will parallel the project Scope of Work (SOW).
 - i) Commissioning – Certifying that the new construction is in accordance to the construction specifications from the engineers and architects. Insuring that the construction is done as per our or the designers specifications.
 - ii) Re-commissioning – certifying a building of previous construction with commissioning and going back to the building again to measure and verify the building is performing as was commissioned. Run times, air flows, control set points, HVAC controls and equipment still within operating specifications, etc. Coordinate commissioning requirements with Energy Manager. Typically, the systems and equipment to be commissioned (or recommissioned) will parallel the project SOW.
 - iii) Retro-commissioning – is certifying a building that has not been previously commissioned. This process is accomplished by performing a complete inventory of what needs to be replaced to make the building function properly for HVAC, utilities, and building envelope properties.
- b) The commissioning plan for each building is relatively unique. In general UTNG commissioning plans will emphasize Enhanced Commissioning for LEED Certified projects, extensive staff training, DDC building performance reports, O & M Manuals with summary maintenance schedules for all equipment and an electronic file. Format as specified by the project team, containing a complete inventory of equipment to include warranties.

20) ATFP (Anti-Terrorism / Force Protection)

- a) Plan review. An OPSEC/AT coversheet from the protection branch is required for every project to ensure approval.
 - i) The Utah National Guard has specific requirements in regards to physical building security. All projects need to be reviewed to ensure compliance with current physical security regulations as they pertain to the most recent risk assessment.
 - ii) The Utah National Guard has specific requirements in regards to antiterrorism. All projects need to be reviewed to ensure compliance with the Unified Facilities Construction (UFC) DoD Minimum Antiterrorism Standards for Buildings.
- b) Access and General Protection/Security Policy and Procedures.
 - i) The contractor and all associated subcontractors' employees shall comply with applicable installation, facility, and area commander installation and facility access and local security policies and procedures (provided by the Government representative). The contractor shall also provide all information required for



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



- background checks to meet installation access requirements to be accomplished by the installation Provost Marshal Office, Director of Emergency Services, or Security Office. The contractor workforce must comply with all personal identity verification requirements as directed by DOD, HQDA, and/or local policy. (Contractor to provide a digital passport photo of each employee) See attached Appendix C.
- ii) In addition to the changes otherwise authorized by the changes clause of this contract, should the Force Protection Condition (FPCON) at any individual facility or installation change, the Government may require changes in contractor security matters or processes. During FPCONs Charlie and Delta, all services not previously identified as essential are discontinued. Non-essential services will resume when the FPCON level is reduced to level BRAVO or lower.
 - iii) The company will ensure that its employees entering state-controlled installations or facilities have obtained access badges and passes in accordance with facility regulations and that these badges and passes are obtained in advance so as not to delay the accomplishment of contracted services.
 - iv) The company will return all issued U.S. Government Common Access Cards, installation badges, and/or access passes to the state agency representative from whom they were received when the contract is completed or when a contractor employee no longer requires access to the installation or facility.
 - v) All photographs, sketches, drawings, and plans of UTNG installations, buildings, and facilities are the property of the UTNG and will be returned to the PM when no longer needed for the performance of the contract.
- c) Training.
- i) AT Level I Training. All contractor employees, including subcontractor employees, requiring access to National Guard installations, facilities, or controlled access areas shall complete AT Level I awareness training within 30 calendar days after contract start date or effective date of incorporation of this requirement into the contract, whichever applies. The contractor shall submit certificates of completion for each affected contractor employee to the PM within 90 calendar days after completion of training by all employees and subcontractor personnel. AT Level I awareness training is available at <https://atlevel1.dtic.mil/at>.
 - ii) iWATCH Training. The contractor and all associated subcontractors shall brief all employees on the local iWATCH program (training standards provided by the UTNG Antiterrorism Program Coordinator (ATPC)). This locally developed training will be used to inform employees of the types of behavior to watch for and instruct employees to report suspicious activity to the PM. This training shall be completed within 30 calendar days of contract award and within 30 calendar days of new employees' commencing performance, with the results reported to the PM no later than 90 calendar days after contract award.
 - iii) OPSEC Training. New contractor employees must complete OPSEC awareness training within 30 calendar days of beginning work at Utah National Guard facilities. Training will specify the UTNG critical information, why it needs to be protected, where it is located, who is responsible for it, and how to protect it. For contracts



lasting more than one year, all contractor employees will complete annual OPSEC awareness training.

- iv) Information Assurance (IA)/Information Technology (IT) Training. All contractor employees and associated subcontractor employees must complete the DoD IA awareness training before issuance of network access and annually thereafter. All contractor employees working IA/IT functions must comply with DoD and Army training requirements in DODD 8570.01, DoD 8570.01-M, and AR 25-2 within six months of employment.

21) Facility-Related Controls and Cybersecurity

- a) Facility-related control systems will be designed to monitor and operate building control systems, utility control systems, electronic security systems, and fire and life safety systems devices, etc. in accordance with UFC 4-010-06 Cybersecurity of Facility-Related Control Systems. This UFC describes requirements for incorporating cybersecurity in the design of all facility-related government-owned control systems. It defines a process based on the Risk Management Framework suitable for control systems of any impact rating, and provides specific guidance suitable for these control systems.
- b) Control system designers must balance requirements for value, cost, compatibility, flexibility and security. The UTNG uses the Tridium Niagara framework for building control systems and various other frameworks for other systems. Therefore, A/E and designers must coordinate with the PM to ensure that the systems will function as designed in the Niagara framework.
- c) Each device must be physically safe from tampering and unauthorized access. Devices and systems must also be securely configured using individual passwords and two-factor authentication where possible.
- d) Firewalls, intrusion detection systems, intrusion prevention systems, malware and virus prevention software should be included in building automation networks where possible.
- e) Use the “secure by default” approach where the first option for users and programmers is the most secure option.
- f) Code should be digitally signed and validated for integrity and runtime to assure it has not been manipulated or altered.
- g) Do not expose devices on the internet. If they require remote access, set them up behind a secure gateway or virtual private network router. Use an isolated control network where possible. When devices require communications to the internet cloud, follow the ICS-CERT’s guidelines in their publication, “Configuring and Managing Remote Access for Industrial Control Systems.”
- h) Ensure that logon credentials will be changed for new devices so they will not use factory-default credentials after commissioning.
- i) Keep systems up to date during programming and commissioning by installing and keeping track of security patches.
- j) Schedule periodic system backups as a part of device and system programming.



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



- k) Use encrypted communications with devices and systems where possible.

22) Equipment Tagging and Labeling.

- a) All installed equipment will be tagged and labeled. Contact the PM for the current system being used for numbering.
- b) This will include a bar code label attached with assigned numbers from the CFMO maintenance department.
- c) The contractor will ensure that all equipment has the tag attached and displayed in a location easily identified by the maintenance department.
- d) The information on the equipment required and numbers assigned to accomplish the tagging and labeling will be provided by the CFMO maintenance dept. All O&M manuals will be provided to CFMO for any installed equipment.

23) Signage

- a) Besides the standard code required signage, door signs will also be provided for all offices and conference rooms.
- b) The door signs standards are provided by CFMO and can be locally purchased from UCI industries. This also includes the height, and placement location.
- c) Exterior signage will be included in the bid when resurfacing or painting the exterior of buildings. This includes address or building numbers and signs indicating the purpose of the building to include designation of the Utah National Guard and the building users. The signs will be made to complement the building using signs or raised lettering. Approval will be done through the PM.
- d) A/E will incorporate designated parking spaces for handicapped access, chain of command and GSA/State vehicles into parking lot plans for armories and field maintenance shops.
- e) PM will include signage for projects involving fencing at reservation boundaries, bullpens, etc.

24) Landscaping

- a) Landscaping will include a 3 foot buffer using weed barrier and decorative rocks around buildings to prevent the need to irrigate next to building walls. Set turf and plants that need irrigation away from the buildings by at least three feet.
- b) Utilize xeriscape and drought resistant plantings to reduce the need for watering.
- c) Design of sprinkler systems should utilize heads that do not allow water to spray on the buildings during high winds or adverse weather conditions.



- d) Use road base (untreated base course or UBC) under all sidewalks, curbs, gutters, exterior concrete flatwork, etc. UBC is better than gravel because it contains a significant fraction of fine material to “glue” the gravel together. Gravel without fines does not compact as well as UBC. Consider gravel in applications where it may be important to drain free water from under the concrete or pavement.
- e) Consider using a geotextile fabric when underlying soils are marshy or very weak. The fabric can reinforce and provide separation of the base course from the native subbase materials. In construction over soft soil, a geotextile can be placed over the soft subgrade, and then gravel or crushed stone placed on the geotextile. The geotextile prevents mixing of the two materials.
- f) Contractor will remediate disturbed areas by adding an appropriate wildland seed mix at the proper seed density. This must be done in the late fall if the area is not irrigated. Contact Douglas Johnson of the UTNG Environmental Resource Management Directorate at 801-878-5658. He can advise on the proper seed mix and density for different areas of the state.

25) Gravel Parking Lots and Roads

- a) Gravel parking lots will consist of the gravel and base courses recommended by the geotechnical engineer on the soil study for the project.
- b) The surface course of parking lots will generally consist of crushed gravel to keep the vehicle cabs and the parking lot relatively mud-free. The maximum size of this surface course gravel is generally ¾” to 1”.
- c) Gravel roads should have crown or side slope of 3-4% to allow the roads to drain properly
- d) UBC is suitable surface material for gravel roads. The fines in a properly shaped and compacted road surfaced with UBC can form a crust to allow runoff to drain from the road. The size of the largest aggregate can vary depending on the traffic loading of the road.
- e) Ditch side slopes next to the shoulder of a gravel road should have a slope of 3 horizontal to 1 vertical or less steep to allow vehicles to climb back on the road if they slide into the ditch.
- f) Ditch side slopes steeper than 1-1/2 horizontal to 1 vertical or steeper are unacceptable because seeds run off the slope before they can germinate.
- g) Ditch bottom slopes greater than 5% should be lined or diverted to prevent erosion. Avoid long stretches of steep ditch bottoms. Water flowing in a steep ditch will widen the ditch, erode banks and cross nearby slopes and roads. Steep ditches should be diverted into nearby flat fields or into culverts to cross the road and move runoff away from the road.



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE





APPENDIX A

Utah National Guard

Statement of Work and Standards for Structured Cabling Projects

Version September 13, 2021



Table of Contents

Introduction	25
1.1 About Utah National Guard	25
1.2 Purpose of This Document	25
1.3 Key Dates	25
1.4 Key Personnel	25
1.5 Questions	26
1.6 Supplemental Information	26
1.7 Environmental Policy	26
1.8 Proposal Instructions	27
Proposal Organization:	27
Cost Basis:	27
Selection Criteria:	27
Award of Contract:	28
1.9 Pre-Requisites	28
1.10 Definitions, Acronyms and Abbreviations	29
Approved Contractors	29
Americom Technology Contact: Chris Caldwell	29
Cache Valley Electric Contact: Brian Parkin	30
IES Commercial, Inc. Contact: Jason King	30
TeamLINX LLLP Contact: Mike Herd	30
Wasatch Electric Contact: Marc Varner	30
Cabling Specification Standards	30
2.1 Copper Cabling	30
2.2 Copper Cabling Hardware	31
Copper Cable Patch Panels	31
Information Outlets	32
Faceplates	32
Above Ceiling Boxes for Cameras and Wireless Access Points	33
2.3 Fiber Cabling	33
OM1 Multimode Fiber 62.5 micron	34
OS2 Singlemode Fiber 8.3 micron	34
2.4 Fiber Cabling Hardware	35
Fiber Optic Connector	35
Fiber Optic Adaptors	35
Fiber Optic Panel Shelf	35
2.5 Patch Cords	36
Copper Patch Cords	36
2.6 Fiber Patch Cords	36



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



2.7	Horizontal Cable Management.....	36
2.8	Network Racks and Cabinets	36
	Server Cabinets:.....	36
2.9	Cable Runway System – Ladder Racking/Fiber Guide	36
2.10	Grounding/Bonding	37
2.11	Conduits.....	37
2.12	MDF for Army Garrison Camp Williams (AGCW).....	37
2.13	Firestopping	38
2.14	Supplemental Instructions.....	38
2.15	Coordination	38
2.16	Standard Outlet Configuration	38
2.17	Fiber Terminations.....	38
2.18	Cable Removal	38
2.19	Plywood	38
2.20	Hook and loop.....	39
2.21	Fire Suppression	39
2.22	Cooling	39
	Cabling Components Labels Definition.....	39
	Readiness of IT & Specialized Rooms	41
	Roles & Responsibilities of System Integrator	41
	2.23 System Integrator Responsibilities	41
	2.24 Installation Guidelines	41
	Quality Assurance	42
	Testing and Certification	42
	2.25 Testing	42
	2.26 Workmanship	43
	2.27 Inspection	43
	Warranty	44
	Additional Considerations	45
	2.28 Project Manager	45



Introduction

1.1 About the Utah National Guard

The Utah National Guard comprises both [Army](#) and [Air National Guard](#) components. The [Constitution of the United States](#) specifically charges the National Guard with dual federal and state missions. The National Guard is the only [United States](#) military force empowered to function in a state status.

More information is available at <https://state.nationalguard.com/utah>.

1.2 Purpose of This Document

The Utah Army National Guard (UTARNG) requires that Telecommunication components be installed in accordance with Industry Standard TIA/568B. All projects must be coordinated and approved through the UTARNG State Communications Manager (Shawn Beck) to ensure that industry standards are adhered to.

This Statement of Work document gives details of UTARNG requirements and specifications for the premise structured cabling system, manufactured by CommScope/SYSTIMAX, which will meet the Voice, Video and Data Communication needs of UTARNG.

The structured cabling system proposed and quoted, shall incorporate all features, facilities and parts listed in this document, however, the quantity of parts will vary based on the size of the project.

The Structured Cabling System (SCS) shall be in accordance with ANSI/TIA/EIA568-C.2 and by the Building Industry Consulting Service International (BICSI) guidelines and shall consist of cable and connecting hardware manufactured by CommScope SYSTIMAX Solutions.

Section 4 of this Document provides a list of UTARNG standards and recommendations on the various cabling components to be used. These standards and recommendations are developed based on the SYSTIMAX Structured Cabling Solution and should be adhered to whenever possible.

In the event that a certain cabling product or component is not available or the product or component has been replaced with a newer version, the bidding Cabling Services Providers should clearly make this known in the proposal response and provided details of the alternative.

1.3 Key Dates

Proposal Review: The Contractor should allow the Owner two weeks for review of proposals and award. A start date will be provided in the Notice of Award.

1.4 Key Personnel

Shawn Beck by telephone at 801-432-4114, or by e-mail at shawn.l.beck2.mil@mail.mil

Dave Bullock by telephone at 801-432-4133, or by e-mail at david.d.bullock.nfg@mail.mil



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



1.5 Questions

Questions regarding this Statement of Work should be presented in writing to:

Utah Army National Guard

UT-G6, ATTN: Shawn Beck

P.O. Box 1776

Draper, UT 84020

FAX (801) 432-4844

E-mail questions to shawn.l.beck2.mil@mail.mil

A written answer to any such questions will be provided to all respondents to this request for proposals.

1.6 Supplemental Information

The Contractor shall be fully conversant and capable in the cabling of low voltage applications such as, but not limited to data, voice and imaging network systems. The Contractor shall at a minimum possess the following qualifications:

Personnel trained and certified in the design of the Systimax Cabling Solution.

Personnel trained and certified to install the Systimax Cabling Solution.

The Designer and Installer shall show proof of current certification of the Systimax Cabling Solution via an updated card given after attending the 5- day course or a re-certification class given every two years.

Personnel trained and certified in fiber optic cabling, splicing, termination and testing techniques.

Personnel must have experience using a light meter and OTDR.

Personnel trained in the installation of pathways and support for housing horizontal and backbone cabling.

1.7 Environmental Policy

The UTARNG is committed to the protection and preservation of the environment and the safeguarding and protection of UTARNG employees, on-site personnel and the community. It is UTARNG policy to protect employee health and safety at all times. The UTARNG does its' utmost to be environmentally responsible to its customers, employees, the community and the nation. As part of this commitment the UTARNG has set the following environmental and health and safety objectives.



UTAH NATIONAL GUARD

CONSTRUCTION FACILITIES MANAGEMENT OFFICE



- Compliance with all applicable International, Federal, State and Local environmental and health and safety regulations.
- Ensuring that environmental, health and safety policies are adhered to by employees at all times.
- Prevention of pollution through reduction, reuse and recycling of materials through the development of an environmental, recycling and reuse program.
- Safeguarding of the environment through the establishment of best management practices and community interaction.

1.8 Proposal Instructions

The proposal must include the following components: a technical proposal, a cost proposal, a delivery schedule, and a presentation of the Contractor's personnel qualifications and experience. Proposals that do not include the specified elements may be rejected. The Contractor is encouraged to submit copies of relevant projects performed (TIA/568B) within the last two years with the proposal.

Proposal Organization:

The Contractor **shall** break down their proposal deliverables and costs into parts and labor.

Cost Basis:

The Contractor **shall** show a unit price breakdown for the personnel, materials and tasks to be provided, as well as lump sum prices per project.

The cost **shall** should include projected labor categories, hours and billing rates.

The cost proposal **shall** identify any proposed subcontractors and their labor categories, hours and billing rates.

Selection Criteria:

The UTARNG will use the following criteria, equally weighted, to select the successful Contractor for this work.

Technical Abilities and Approach: The qualifications and experience of key personnel, as well as the proposed methodologies and resources will be considered.

Past Performance: The experiences of the Contractor most closely related to this project will be considered, particularly successful completion of projects using Industry Standard TIA/568B.

Responsiveness: The ability of the Contractor to dedicate sufficient resources to the project and to be readily available will be considered.

Cost: The overall costs proposed by the Contractor and the completeness of detail of these costs will be considered.



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



Award of Contract:

Award of any Contract is contingent upon availability of state/federal funds to perform this work. The UTARNG anticipates award of all work to a single Contractor, but reserves the right to split the award or make a partial award.

The completed proposal should be mailed to:

Utah Army National Guard
UT-AAG-SMD, ATTN: Jayson Ilada
P.O. Box 1776
Draper, UT 84020

Electronic copies should be sent to jilada@utah.gov accompanied by a hard copy cover letter on letterhead.

All questions may be directed to either Shawn Beck or Dave Bullock.

Shawn Beck		Dave Bullock
801-432-4114 Office	or	801-432-4133 Office
801-716-9114		801-716-9099 Cell

1.9 Pre-Requisites

The selected System Integrator shall be fully capable and experienced in the Structured Premise Network Cabling System.

During the evaluation process, the UTARNG may, with full cooperation of the System Integrators, visit the System Integrators' places of business, observe operations, and inspect records.

Requirements

- The System Integrator must have a minimum of 5 years' experience.
- The Contractor must be a current CommScope/SYSTIMAX Authorized System Integrator/Partner (VAR).
- The Contractor shall have previously installed a minimum of 4 Sites each of 1,000+ Copper Connections & 100+ Fiber Connections. Present recent Customer References of completed projects of similar type and size with contact names and telephone numbers for each.
- A list of test equipment proposed for use in verifying the installed integrity of copper and fiber optic cable systems on this project.
- Contractor shall be able to meet stringent Project Deadlines.
- Contractor shall have an in-house team of Engineers to execute this project. No sub-contractors will be allowed.
- Substitution of parts is not allowed unless approved by the UTARNG designer.
- **Contractor must utilize BICSI Certified Personnel for installations at a ratio of (1) BICSI Certified Technician (TECH) for every three (3) total people onsite.**



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



- **Contractor must utilize CommScope Certified Personnel for all aspects of the installation. A CommScope Design Engineer and Installation & Maintenance certified technician must be onsite at all times for the duration of the project.**
- **Contractor must utilize personnel that have completed the OSHA 10 Hour Construction Industry Outreach Training Program.**

Definitions, Acronyms and Abbreviations

Definitions of terms, acronyms, and abbreviations are provided here.

Term	Definition
MPOE / EF	Main Point of Entry / Entrance Facility – This is the location of the main point in the building for the entry of all data and voice services.
MDF / ER	Main Distribution Frame / Equipment Room – This is the room that will contain the network/patch racks, main IT equipment and backbone cabling. This room may also contain Telecom vendor equipment, physical security equipment and servers. There is normally only one MDF / ER. This room may also serve as the MPOE / EF and also as an IDF / TR
IDF / TR	Intermediate Distribution Frame / Telecommunications Room – This room provides a floor-serving distribution facility for horizontal cabling. These are needed when the horizontal cabling will exceed 90 meters. There can be multiple IDF / TR rooms per site. These rooms can also contain IT network equipment.
IO	Information Outlet – This is the fixed outlet terminating the horizontal subsystem wiring at the work area

Approved Contractors

This is a list of all approved SYSTIMAX contractors and installers in the State of Utah

Americom Technology Contact: Chris Caldwell

5305 W 2400 South England Ct.
West Valley City, UT 84120
Tel: 801-892-0533
FAX: 801-892-0533



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



Cache Valley Electric Contact: Brian Parkin

2345 South John Henry Dr
Salt Lake City, UT 84119
Brian.parkin@cve.com
Tel: 801-908-2680
FAX: 801-908-7041

IES Commercial, Inc. Contact: Jason King

1960 South Milestone Drive
Suite D
Salt Lake City, UT 84104-4853
Jason.king@ies-com.com
Tel: 801-301-1508
FAX: 801-972-9095

TeamLINX LLLP Contact: Mike Herd

9980 S. 300 W.
Suite 254
Sandy, UT 84070
mherd@teamlinx.com
Tel: 801-702-7083

Wasatch Electric Contact: Marc Varner

2455 West 1500 South
Suite A
Salt Lake City, UT 84104
mvarner@wasatchelectric.com
Tel: 801-487-4511
FAX: 801-487-5032

Cabling Specification Standards

The following is the default specification for all cabling products. Project specific specifications are detailed in following sections.







2.1 Copper Cabling

Cable

Use the following Plenum cable when local codes mandate or equivalent.





- For LAN, Wireless, AV, Data Center and Security Cables - Plenum

	COMMSCOPE 7504	CAT 6 BLUE PLENUM (NIPR VOICE)
	COMMSCOPE 7504	CAT 6 YELLOW PLENUM (NIPR DATA)
	COMMSCOPE 7504	CAT 6 GREEN PLENUM (RTI)
	COMMSCOPE 7504	CAT 6 WHITE PLENUM (SPEAKERS)
	COMMSCOPE 7504	CAT 6 GRAY PLENUM
	COMMSCOPE 7504	CAT 6 RED PLENUM (SIPR)

2.2 Copper Cabling Hardware

Copper Cable Patch Panels







The recommended standard for Copper Cable Patch Panel is:

	760105429 M4800-1U-GS	CS-SYSTIMAX M4800-1U-GS, 1U HIGH DENSITY 48 PORT MODULAR PANEL 760105429
	760104737 360-RCM-RM	CS-SYSTIMAX 360-RCM-RM, REAR CABLE MANAGEMENT SYTEM (RACK MOUNTABLE, ONE PER 48 PORT PANEL) 760104737




Information Outlets

The recommended standard for Information Outlet is:

	760092445 MGS600-123	CS-SYSTIMAX MGS400BH-123 1-PORT MOD JACK 110 8W8P UTP T568A/B CAT6 GIGASPEED 700206691 YELLOW
	760092429 MGS600-318	CS-SYSTIMAX MGS400BH-318 1-PORT MOD JACK 110 8W8P UTP T568A/B CAT6 GIGASPEED 700206758 BLUE
	700206709 MGS400-226	CS-SYSTIMAX MGS400BH-XXX 1-PORT MOD JACK 110 8W8P UTP T568A/B CAT6 GIGASPEED GREEN
	700206725 MGS400-262	CS-SYSTIMAX MGS400BH-XXX 1-PORT MOD JACK 110 8W8P UTP T568A/B CAT6 GIGASPEED WHITE
	700206733 MGS400-270	CS-SYSTIMAX MGS400BH-XXX 1-PORT MOD JACK 110 8W8P UTP T568A/B CAT6 GIGASPEED GRAY
	700206741 MGS400-317	CS-SYSTIMAX MGS400BH-XXX 1-PORT MOD JACK 110 8W8P UTP T568A/B CAT6 GIGASPEED RED

Faceplates and MUTOA





The recommended faceplate to be used in a hard wall application is:

	108168469 M12L-262	L Type Flush Mounted Faceplate, two port white
---	-----------------------	--



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE




	108168543 M14L-262	L Type Flush Mounted Faceplate, four port white
	108168584 M16L-262	L Type Flush Mounted Faceplate, six port white
	108168543 M28-262	L Type Flush Mounted Faceplate, eight port white
	106658156 M112SMB-262	M112 Type Surface Mount Box, twelve port white

Notes: The recommended workstation furniture faceplate to be used should be coordinated with the furniture vendor. Coordinate specific termination location in the workstation panels with the UTARNG designer. Cabling VAR will provide faceplates/escutcheon.

Above Ceiling Boxes for Cameras and Wireless Access Points

Above ceiling Plenum Rated IO box

	107984056 M102SMB-B-262	M102 Type Surface Mount Box, dual port white
---	----------------------------	--


2.3 Fiber Cabling

Verify all strand counts with UTARNG personnel and the system designer prior to installation. Strand counts listed below are for reference only and do not necessarily represent each project's needs.




OM1 Multimode Fiber 62.5 micron

- For use in SCIF or secured areas


	006K88-31130-29	MIC® Cable, Plenum, 6 F, 62.5 µm multimode (OM1)
---	-----------------	--

OS2 Singlemode Fiber 8.3 micron


- For use in duct banks, conduits and risers
- ISP RISER FIBER (ARMORED)

	012E88-33131-A3	MIC® Interlocking Armored Cable, Plenum, 12 F, Single-mode (OS2)
---	-----------------	--

- ISP RISER FIBER (NON-ARMORED)

	012E88-33131-29	MIC® Cable, Plenum, 12 F, Single-mode (OS2)
---	-----------------	---

- OSP FEED FIBER


	012ZUC-T4F22D20	ALTOS® Lite™ Loose Tube, Single-Jacket, Single-Armored Cable with FastAccess® Technology, 12 F, Single-mode (OS2)
---	-----------------	---



2.4 Fiber Cabling Hardware


Fiber Optic Connector

The recommended standard for Single Mode Fiber Optic Connector is:

	95-201-41-SP	CORNING ANAEROBIC-CURE CONNECTORS BLUE SC SINGLEMODE 8.3 um CERAMIC FERRULE 95-201-41-SP
---	--------------	---




Fiber Optic Adaptors

The recommended standard for Singlemode Fiber Optic Adaptors is:


	CCH-CP12-59	Closet Connector Housing (CCH) With SC Adapters, Singlemode, (6) Duplex Adapters for 12-Strand Fiber
---	-------------	---

Fiber Optic Panel Shelf

The recommended standard for Fiber Optic Panel Shelf is:

	CCH-01U	CORNING CCH-01U CLOSET CONNECTOR HOUSING THAT ACCEPTS TWO CCH PANELS
	CCH-02U	CORNING CCH-02U CLOSET CONNECTOR HOUSING THAT ACCEPTS FOUR CCH PANELS
	CCH-03U	CORNING CCH-03U CLOSET CONNECTOR HOUSING THAT ACCEPTS SIX CCH PANELS



	CCH-04U	CORNING CCH-04U CLOSET CONNECTOR HOUSING THAT ACCEPTS TWELVE CCH PANELS
---	---------	---

2.5 Patch Cords

Copper Patch Cords


- CS-SYSTIMAX CPC3312-03F001 CBL ASSY 110-MOD GS8E CAT 6 PATCH CORD T568B 1FT - GREY
- CS-SYSTIMAX CPC3312- 03F014 CBL ASSY 110-MOD GS8E CAT 6 PATCH CORD T568B 14FT-GREY (WORK STATION SIDE)
- CS-SYSTIMAX CPC3312- 03F025 CBL ASSY 110-MOD GS8E CAT 6 PATCH CORD T568B 25FT-GREY (WORK STATION SIDE)
- Provide (1) of each length listed above per data cable installed.

2.6 Fiber Patch Cords

NOT REQUIRED

2.7 Horizontal Cable Management

The recommended standard for Horizontal Cable Management is:

	HTK-19-DS-2U	COMMSCOPE HORIZONTAL CABLE MANAGER 2U
---	--------------	---------------------------------------

2.8 Network Racks and Cabinets

Server Cabinets:

Equipment racks for telecom/network equipment must be either the 4 post 7' lockable style from APC Netshelter part# AR3140 or a wall mount lockable APC Netshelter rack part# AR100HD, contact Shawn or Dave to see which rack or racks will be used at which location.

2.9 Cable Runway System – Ladder Racking/Fiber Guide

Cable Tray and Ladder Racking installation must follow the NEMA VE 2-2013 standard.

Cable runway system provides improved cable organization for easy cable changes. Cable runways prevent tangles and cable damage to maintain quality data transmission.



The recommended standard cable runway system consists of CPI 12" Ladder with Rack Butt / Corner Clamp and Wall Mounting Brackets. The ladder racking should be mounted above the Racks.

2.10 Grounding/Bonding

The recommended standard for Equipment Frame Grounding Solution is:

CPI Two Hole Ground Terminal Block (40167-001)

All Network Rack and Ladder Racking must be grounded in compliance with ANSI J-STD-607-A, Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications, 2002 using SYSTIMAX Grounding products where available which bond cable runway components and connect equipment frames to the telecommunications ground.

2.11 Conduits

Unless specified, the Communication Riser Conduits shall be a minimum size of (1 inch) and installed so that no section of conduit shall be longer than 30 meters (100 feet) or contain more than 2, 90° bends between pull points or pull boxes.

All conduits shall be clearly labeled at both ends designating the floor closet and sequential number of the conduit originating at the closet.

Conduit must home run to the telecommunications room.

A fill ratio for all conduit runs is not to exceed 60%. Standards generally call for conduit 40% fill limits - Note that this can be increased where conduit is used for short sleeves and when careful feed and pulling is exercised.

2.12 MDF for Army Garrison Camp Williams (AGCW)

Standard Equipment:

1. AVAYA 107894966 100 PAIR LIGHTING PROTECTION 110 TERMINATION STYLE
2. CORNING PCH-04U RACK MOUNT LIU.

The MDF at AGCW is in building 6170. To gain access to this area you will have to contact Shawn Beck at (801-432-4114). All work to be bid on or done at AGCW will contact Shawn prior to starting.

Manholes and Misc. Info

- Copper Splice Cases ARMADILLO Stainless Splice Closure. You will need to talk to Shawn Beck or Dave Bullock to determine what ends need to be placed on the ends of the splice case.
- Fiber Splice Case Coyote 80805514 (Splice tray will depend on amount of fiber)



There are several Manholes at AGCW. When pulling Backbone Cable, you will leave a 20 ft maintenance loop in every manhole between the IDF and the MDF.

All splices will be sealed water tight. If a case is opened, it will be resealed to maintain a water tight seal. All splices in optical fiber cable will be fusion spliced. Splices in the copper cable will be done in a splice case with a 710 splice tool and with mods. Splice case must be made water tight.

To find a path from the IDF to the MDF you will need to speak with Shawn Beck or Dave Bullock.

2.13 Firestopping

Provide fire stopping systems to meet the hourly time delay rating of the fire rated floor, wall, or other partition through which penetrations have been made.

2.14 Supplemental Instructions

All telecommunication work to be done on any Utah Army National Guard Facility will be coordinated and approved through Shawn Beck (801-432-4114).

2.15 Coordination

Layout of the Systimax Solution will be coordinated through Shawn Beck.

2.16 Standard Outlet Configuration

There will be one blue and one yellow CAT 6 wire pulled to each location, with a minimum of 3 feet on station end and 10 feet on closet end coiled above the ceiling. They will correlate with the same number on the patch panel System (ex. Jack 101 will have one blue and one yellow wire that will be in the same location on the patch panel System).

2.17 Fiber Terminations

Fiber will be terminated in an LIU can. Termination of fiber will be done on the SC style connector unless specified otherwise. This will depend on location. Coordinate connector type with UTARNG personnel prior to installation.

2.18 Cable Removal

When upgrading or replacing the communication cabling at any UTARNG facility the old cabling must be extracted and delivered to UTARNG personnel for recycling purposes prior to the completion of the project.

2.19 Plywood

In a MDF or IDF there must be no less than two 4x8 foot fire retardant sheets of plywood mounted vertically side by side of one another and the minimum size for these rooms shall be 6'x 8'. Coordinate plywood supply/installation with General Contractor and Electrical Contractor to resolve duplication of scope.



2.20 Hook and loop

Use only hook and loop cable wraps, cable-tie wraps are not acceptable.

2.21 Fire Suppression

All telecommunication rooms must have a fire suppression system that adheres to these three standards: NFPA72 (or ISO 7240) for guidance on the design of the detection system, NFPA 2001 (or ISO 14520) for guidance on the design of the clean agent system itself, and the standard applicable to the particular facility. In addition, any local codes or standards, and any requirements mandated by the local authority having jurisdiction (AHJ) must also be adhered to in the design of a clean agent fire suppression system.

2.22 Cooling

All telecommunication rooms must have a Mitsubishi Mr Slim wall mounted MSZ series A/C unit that is sized appropriately for the anticipated heat output from electrical components.

Cabling Components Labels Definition

The System Integrator must utilize the ANSI/TIA/EIA-606-B Standard for labeling all cables, patch panels and information outlet. Unless specified, all labeling will be in English.

- Each Station **Faceplate** shall be labeled with a unique identifier – identifying which MDF or IDF the cables are connected to.

Example of Station cable labeling:

1 st floor MDF room	Label Faceplate	1.0 – 1001 & up
1 st floor IDF Room	Label Faceplate	1.1 – 1001 & up
2 nd floor IDF room	Label Faceplate	2.0 – 2001 & up
2 nd floor IDF room	Label Faceplate	2.1 – 2001 & up
3 rd floor IDF room	Label Faceplate	3.0 – 3001 & up
3 rd floor IDF room	Label Faceplate	3.1 – 3001 & up
4 th floor IDF room	Label Faceplate	4.0 – 4001 & up



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



Example of Access Point cable labeling:

1 st floor MDF room	Label Faceplate	AP – 1.0 - 01 & up
1 st floor IDF Room	Label Faceplate	AP – 1.1 - 01 & up
2 nd floor IDF room	Label Faceplate	AP – 2.0 - 01 & up
2 nd floor IDF room	Label Faceplate	AP – 2.1 - 01 & up
3 rd floor IDF room	Label Faceplate	AP – 3.0 - 01 & up

Example of Rack Labeling:

1 st floor MDF room	Label Rack	RACK 1.0-1 & up
1 st floor IDF Room	Label Rack	RACK 1.1-1 & up
2 nd floor IDF room	Label Rack	RACK 2.0-1 & up
2 nd floor IDF room	Label Rack	RACK 2.1-1 & up
3 rd floor IDF room	Label Rack	RACK 3.0-1 & up

- Every MDF and IDF room shall have a computerized CAD Floor plan mounted on the wall with clear representation of every cable number and location.
- Provide Rack Elevation Drawings for each IT room. Drawings are to be compiled in Visio and CAD and sent to Utah National Guard prior to starting installation.
- Components shall be marked where they are administrated (label at all punch down points, panels, blocks, outlets, etc.).
- All pathways labeled (conduit, trays etc.).
- The Cabling Services Provider will also provide the Labels for Faceplates / Racks / Fiber Patch Panels, etc.



Readiness of IT & Specialized Rooms

Mounting, installation, configuration and testing of telecommunication and IT equipment in the IT & Specialist rooms can only be carried out when the room is a READY mode. By definition a room is deemed READY when:

- Racks and cabinets installed.
- Cable trays and ladder racks installed.
- Seismic bracing (where applicable) of all equipment completed.
- Installation, termination, testing and certification of communication cabling as follows:
 - Riser Cabling (Copper & Fiber Optic).
 - Inter / Intra rack cabling
 - Grounding

Roles & Responsibilities of System Integrator

2.23 System Integrator Responsibilities

With respect to installation of the Premise Structured Cabling System, the System Integrator is responsible for:

- Installation and termination of all cables between the Patch Panels and Information Outlets.
- Installation of Open Racks and Cabinets with proper grounding.
- Installation of Patch Panels, Vertical & Horizontal Cable Management Panels.
- Submit a SYSTIMAX 20-year warranty application within 30-days after project completion on behalf of Utah Army National Guard. Warranty must be executed and delivered to Utah National Guard within 60 days of project completion.

2.24 Installation Guidelines

In order for unshielded twisted-pair cabling infrastructure to deliver high-speed performance, it is manufactured to very tight specifications. Consequently, to maintain the unshielded twisted-pair cabling system performance proper installation practices must be followed.

- Never crush the cable with fasteners – cable must be able to move freely under discrete fastener without jacket deformation. Use of Velcro cable ties in the closets is required.
- Do not kink, knot or snag the cable while pulling; this will cause damage under the jacket and alter cable performance – replacement of damaged cable is required by SYSTIMAX to be covered under warranty.
- Do not to exceed the manufacturer's specified cable pulling tension.
- Do not exceed the minimum "at-rest" bend radius of: 4 x Outside Diameter (OD) for 4-pair UTP; 10 x OD for multi pair (more than 4 pair) UTP; 1.18 inches for two fiber cable; 10 x OD for multi-fiber cable.



UTAH NATIONAL GUARD

CONSTRUCTION FACILITIES MANAGEMENT OFFICE



- Follow manufacturers specifications for cable fill limits. Cabling pathway depth must not exceed 23 cm (9 in), or 15 cm (6 in) for standards compliance.
- Standards generally call for conduit 40% fill limits - Note that this can be increased where conduit is used for short sleeves and when careful feed and pulling is exercised. A fill ratio for all conduit runs is not to exceed 60%.
- Per TIA/EIA 568-C.2 never un-twist the pairs of cable beyond what is required for termination per manufacturer's instructions.
- The cable jacket on UTP shall only be stripped back the minimum required to terminate to connecting hardware per manufacturer's instructions.
- Cable management panels shall be used when terminating cable.
- Use the same performance criteria for both cable, cord and connecting hardware through the entire horizontal run.
- Maximum UTP permanent-link cable lengths of 90 meters (295 feet) shall not be exceeded.
- All non-armored fiber optic cables shall be set in inner-duct with the appropriate flame and smoke rating.
- Connecting hardware for optical fiber to be installed at the following locations: main cross-connect, intermediate cross-connect, horizontal cross-connect, horizontal transition point, telecommunications outlet, shall not surpass minimum bend radius and shall be capable of storing 1 meters (3.28 feet) of additional fiber.
- Shared sheath / multiple applications to the IO is not acceptable.
- Follow the proper 4-pair wiring configuration – only T568B pinning is allowed throughout the entire installation.

Quality Assurance

SYSTIMAX, the manufacturers of cables and hardware specified herein, shall be ISO 9001 registered. Initial Qualification and Certification of the manufacturer is required. A certified SYSTIMAX representative is required to inspect and certify the cabling job after completion.

Testing and Certification

2.25 Testing

Testing of all installed "Permanent-Links" shall be performed using a Level II hand held tester and performed to the latest revision of TIA-568-C.0 ANNEX E. All reports shall be recorded and presented to the UTARNG PM via CD format before acceptance. This also includes all installed fiber Permanent-Links. Fiber will be tested for both wavelengths of multi-mode fiber by power meter and light source.

Testing of Permanent-Link cabling shall be performed prior to system cut-over, 100% of the UTP horizontal and riser pairs shall be tested for opens, shorts, polarity reversals, transposition and presence of AC voltage. UTP voice, data and building control device horizontal wiring pairs shall be tested to TIA/EIA 568-C.2 from the information outlet to the MDF and IDF and from the MDF and IDF to the information outlet.



UTAH NATIONAL GUARD

CONSTRUCTION FACILITIES MANAGEMENT OFFICE



- Testing all installed Cables by using a Level II hand held tester and performed to the latest revision of TIA/EIA TSB-67 and TSB95.
- Fiber to be tested on wavelength of Multi-mode Fiber by power meter and light source
- 100% of UTP cable to be tested for open, shorts, polarity reversals, transposition and presence of AC voltage.
- UTP voice, data and building control device horizontal wiring pairs shall be tested to TIA/EIA 568-C.2 from the information outlet to the TC and from the TC to the information outlet.
- Providing UTP Cable and Optical Fiber OTDR Test Reports
- Providing Optical Fiber Power Loss Test Reports
- Providing Complete Cabling Network Diagrams
- Providing SYSTIMAX TWENTY (2propo) Years Extended Product Warranty and Applications Assurance Program Certificate(s)

2.26 Workmanship

Components of the premise distribution system shall be installed in a neat, orderly manner consistent with the best telephone and data installation practices. Wiring color codes shall be strictly observed and termination shall be uniform throughout. Identification marking and systems shall be uniform, permanent and readable and in accordance with TIA/EIA-606 standards.

2.27 Inspection

On-going inspections shall be performed during construction by UTARNG Designer. All work shall be performed in a high quality craftsman manner and the overall appearance shall be clean, neat and orderly. The following points will be examined:

- Is the design documentation complete?
- Are all cables properly labeled from end-to-end?
- Have all terminated cables been properly tested in accordance with the specifications for the required performance level as well as tested for opens, shorts, polarity reversals, transposition and presence of AC and/or DC voltage?
- Is the cable type suitable for its pathway?
- Are the cables bundled in parallel?
- Have the pathway manufacturer's guidelines been followed?
- Are all cable penetrations installed properly and fire stopped according the code?
- Have the Cabling Services Providers avoided excessive cable bending?
- Have potential EMI and RFI sources been considered?
- Is the Cable Fill ratio correct?
- Are hanging supports within 1.5 meters (5 feet)?
- Does hanging cable exhibit some sag?
- Are MDF & IDF terminations compatible with applications equipment?
- Have machine generated wrap around labels been installed on each end of the cable within 6" of termination?
- Have Modular Panel instructions been followed?



UTAH NATIONAL GUARD

CONSTRUCTION FACILITIES MANAGEMENT OFFICE



- Cable dressing first
- Jackets remain up to the Connecting Block
- All pair terminations tight and undistorted
- Twists maintained up to the Connecting Block
- Are the correct outlet connectors used and turned right side up?
- Are identification markings uniform, permanent and readable?

Warranty

A unique 20-Year Extended Product Warranty and Applications Assurance Program is provided for all certified SYSTIMAX projects. The SYSTIMAX SCS Applications Assurance Program covers all applications currently contained in the SYSTIMAX SCS Performance Specifications. In addition the Assurance Program will cover any application introduced in the future by recognized standards or user forums that use TIA/EIA 568-C and ISO/IEC IS 11801 for UTP channel specifications for cabling.

Upon successful completion of the installation, commissioning and subsequent testing by the Cabling Services Provider, Utah National Guard shall be provided with the SYSTIMAX 20 year Extended Product Warranty and Applications Assurance Program as provided for all certified SYSTIMAX projects.

- The SYSTIMAX 20-Year Extended Product Warranty and Applications Assurance Program shall insure against product defects, that all approved cabling components exceed the specifications of TIA/EIA-568-C and ISO/IEC IS11801, exceed the attenuation and NEXT requirements of the TIA/EIA-568-C and ISO/IEC IS 11801 for cabling links/channels, that the installation will exceed the loss and bandwidth requirements of TIA/EIA-568-C and ISO/IEC IS 11801 for fiber links/Channels, for a TWENTY (20) years period. The warranty shall apply to all passive SCS components.
- In the event of system failure, the System Integrator shall cover all cost to repair or replace the defective products and the cost of labor to perform the repairing and replacement until the cabling system is set up to support the required applications. The 20-Year Extended Product Warranty and Applications Assurance Program shall cover the replacement or repair of defective product(s) and labor for the replacement or repair of such defective product(s) for a TWENTY (20) year period.



Additional Considerations

2.28 Project Manager

The System Integrator will provide a full-time PM who will act as a single point of contact for all activities regarding this project. The PM will be required to make on-site decisions regarding the scope of the work and any changes required by the work.

It will also be the responsibility of the PM to maintain the Utah National Guard facility in a neat and orderly manner during the installation of the structured premise network cabling system. The Utah National Guard facility will be maintained in broom clean condition at the completion of work each day.



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



APPENDIX B

To: Contractors
From: Utah National Guard HQ
Subject: Construction & Demolition Projects for the UTNG

IAW EO 13514, DoDI 4715.4, and AR 420-1, all construction and demolition (C&D) projects for and on behalf of the Utah National Guard must implement a 50% recyclable construction material program to be documented and tracked during construction.

In order to assist contractors with conformance to these regulations, the UTNG has provided this list of materials recycled at the Camp Williams recycling warehouse for their convenience as well as a list of locations where they may transport the remaining C&D recyclable materials. Documentation of the materials recycled must then be reported to the related PM or the Utah National Guard Sustainability/Recycling Manager, Kelly Miller, at (801) 878-5854 or email at kelly.s.miller20.nfg@mail.mil

The Camp Williams recycling warehouse is located at:

**Building 1770
17800 South Redwood Road
Riverton, UT 84065-4999**

List of items that can/cannot be taken to the Camp Williams TISA warehouse:

Materials Recycled:	Excluded Materials:
<ul style="list-style-type: none">✓ Electronics✓ Appliances✓ Cardboard✓ Paper (Mixed, Shredded, etc.)✓ Scrap Metal✓ Other Metals: Steel, Tin, Copper, Aluminum✓ Lead Acid Batteries✓ Wooden Pallets	<ul style="list-style-type: none">- Precious Metals- Hazardous Waste- Electrical Components- Fuels- Radioactive Items- Printer Circuit Boards- Thermal Batteries- Incendiary Products

Recyclable items that **CANNOT** be taken at BLDG 1770 may be taken to these locations:

RECYCLED EARTH
3027 S. Midland Drive
Ogden, UT 84401
(801) 452-6143

CONSTRUCTION MATERIAL RECYCLING, INC.
1267 W. Chapel Ridge Drive
South Jordan, UT 84095-7819
(801) 518-7645



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE

**DUNN RECYCLING**

679 North 1500 West
Orem, UT 84057
(801) 221-9001

DUNN RECYCLING

635 West Airport Rd
Heber, UT 84032
(435) 657-0696

WESTERN METALS RECYCLING

1776 South Colorado Ave
Provo, UT 84606 (also in SLC)
(801) 373-4224

C&D Recycling Documentation Form

In order to document the amount of construction and demolition waste generated and recycled after the completion of a construction project, the UTNG will need the following information (found on landfill disposal invoices and waste recycling invoices):

Contractor: _____ **Contract #:** _____

Project Description: _____

Total Waste Disposed at Landfill (Weight in LBS or TONS):

If you do not know weight in lbs/tons, then enter Bulk Load (m³ or yd³) _____

Total Waste Recycled (Weight in LBS or TONS):

If you do not know weight in lbs/tons, then enter Bulk Load (m³ or yd³) _____

Final Disposal Location: _____

DESCRIPTION OF MATERIAL	ESTIMATED %
Electronics	
Appliances	
Asphalt	
Brick	
Concrete	
Concrete Block Unit	
ABC Other C&D Masonry/Asphalt	
ABC Stone	
ABC Crushed Stone/Base	
Metal – Aluminum	
Metal - Copper	
Metal – Mixed Metal	
Metal – Other C&D Metal	
Metal – Steel	
OD/I/M Ceiling Tile	



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



OD/I/M Composition Roof	
OD/I/M Doors/Windows/Stairs/Cabinets	
OD/I/M Glass	
Plastic	
Cardboard	
Paper	

EXAMPLE:

ABC Company completes project and takes 2 dumpsters filled with appliances and electronics to TISA warehouse. Invoice says 3000 lbs or 1.5 tons. ABC takes 1 dumpster filled with concrete and asphalt to Recycled Earth. Invoice says 4000 lbs or 2 tons. ABC then takes last remaining dumpster with no recyclables to landfill. Invoice from landfill says 2000 lbs or 1 ton.

Total Wasted Disposed at Landfill: 2000 lbs or 1 ton

Total Waste Recycled: 7000 lbs or 3.5 tons (TISA and Recycled Earth)

Lastly, ABC estimates how much of each material it recycled: approximately 25% electronics, 30% appliances, 30% concrete, and 15% asphalt.

Cost: _____

Revenue: _____

Contractor - Sign and Date.

I certify that this information is an accurate assessment of the C&D waste recycled and generated in the course of this project.

Signature: _____ **Date:** _____



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



APPENDIX C

SECURITY SCREENING/DECLARATION			
PRIVACY ACT STATEMENT			
<p>AUTHORITY: Executive Order (E.O.) 10450, Security Requirements for Government Employees; 5 CFR 731.202, Suitability Determinations, E.O. 12958, Classified National Security Information; and E.O. 12968, Access to Classified Information, are the authorities for soliciting information during this interview. 10 U.S.C. 8013, and E.O. 9397 (SSN).</p> <p>PURPOSE: SSN is used for positive identification and will assist in determining the acceptability of an individual for nomination, retention, or further processing for suitability or security determinations.</p> <p>ROUTINE USES: This form serves an addendum to the OF-306 for pre-employment screening. This form is used to screen individuals for access to UTNG facilities when a full background investigation is not required. It can also be used to update background investigations or for pre-deployment screening. It is also used as part of the UTARNG Continuous Evaluation Program. Any information developed during this interview may be disclosed to Federal, state, or local authorities.</p> <p>DISCLOSURE: Disclosure is voluntary; however, failure to provide the requested information may result in reassignment to non-sensitive duties, unfavorable suitability determinations, withdrawal of employment offers, or suspension of classified access.</p>			
Name:	UNIT:		
SSN:	DOB:	CHECK ONLY ONE	
		YES	NO
1. In the past seven years have you been arrested or charged with any offense, been issued a summons, citation, or ticket to appear in any court? (This includes traffic violations)			
2. In the past seven years have you been on probation or parole?			
3. Are you currently on probation or parole?			
4. Have you <u>ever</u> been charged with a felony?			
5. Have you <u>ever</u> been charged with a firearms or explosives offense?			
6. Have you <u>ever</u> been charged with any offense(s) related to alcohol or drugs?			
7. Since the age of 16 or in the last 7 years, whichever is shorter , have you <u>illegally</u> used any controlled substance or prescription drugs?			
Example, marijuana, cocaine, crack cocaine, hashish, narcotics (opium, morphine, codeine, heroin, etc.), amphetamines, depressants (barbiturates, meth, tranquilizers, etc.), hallucinogenic (LSD, PCP, etc.),			



UTAH NATIONAL GUARD
CONSTRUCTION FACILITIES MANAGEMENT OFFICE



8. In the last 7 years, has your use of alcoholic beverages resulted in any alcohol-related treatment or counseling?		
9. In the last 7 years, have you filed a petition under any chapter of the bankruptcy code (to include Chapter 13)?		
10. In the last 7 years, have you been over 180 days delinquent on any debt(s)?		
11. Do you have any accounts that are charged off or currently in collections?		
12. Are you currently delinquent on child support or alimony payments?		
13. In the past 7 years have you had or do you now have any liens for failing to pay property taxes, income taxes, etc?		
14. In the last 7 years have you had any property foreclosed on or repossessed?		
15. Are you currently delinquent on any federal, state, or local debt, including student loans, taxes, etc?		
16. Do you have any pending lawsuits or litigation or other legal issues?		
17. Do you have any immediate family members who are not US Citizens? (Mother, Father, siblings)		
18. Are any individuals you live with not US Citizens?		
19. Have you divorced or married in the last 24 months?		
20. Do you have any close and continuing contacts with individuals who are not US Citizens?		